

REMARKS

These remarks follow the order of the paragraphs of the office action. Relevant portions of the office action are shown indented and italicized.

DETAILED ACTION

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is vague and indefinite what structure is being claimed by the "sound reflecting element". The dependent claims specify what is formed by the element (spheroid) but do not further clarify what the specific STRUCTURE encompasses the claimed "sound reflecting element".

In response the applicants respectfully state that claim 1 is amended to better particularly point out and distinctly claim the subject matter which applicant regards as the invention. The "sound reflecting element" is defined as "having a sound reflecting surface, sound reflecting from said sound reflecting element to reflect a sound wave generated from the sound source inherently corresponding to a sound source position and to enable recording and processing of acoustic data." This makes Claims 1-5 and 16-20 definite, and overcomes the rejection of Claims 1-5 and 16-20 under 35 U.S.C. 112, second paragraph, which become allowable.

Claim Rejections -35 USC ~ 103

3. *The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:*

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. *Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Afendykiw et al ('493).*

The patent to Afendykiw et al discloses a source localization method that collects RF data with delay information, stores the delay information and acquires the relative position of the source from the delay information (see col. 2, lines 14-30, and Figures 1 and 3).

The difference between claim 6 and Afendykiw et al is the claim specifies an acoustic system whereas Afendykiw et al discloses a RF system. However, in as much as acoustic and RF systems both include localization methods it would have been obvious to one of ordinary skill in the art to have utilized Afendykiw et al in an acoustic system.

In response the applicants respectfully state that exception is taken with the alleged obviousness of claims 6-10 by Afendykiw. The present invention as claimed in claims 6-10,

"Enables the estimation of a sound source position at an angle in a system with a small number of microphones, which was conventionally difficult to perform, and improve the precision of estimating the sound source position. By forming a reflecting surface RS as an enveloping surface of a spheroid in which a position of sound collecting means and a sound source position are the focal points, a major reflected wave having a delay amount corresponding to a sound source position is generated, and the delay amount between the direct wave and the reflected wave is checked, whereby the sound source position is acquired and estimated."

Whereas the cited reference to Afendykiw is entitled, "BISTATIC PASSIVE RADAR, the

1 Afendykiw abstract reads,

2 "A radar system for determining the position of a target using a radio frequency
3 source of opportunity. The system uses an interferometer antenna and
4 cross-correlation techniques to measure the time delay in receiving a reflected
5 signal from the target as compared to receiving a direct signal from the signal
6 source. Thereby, the distance from the RF source via the target to the antenna is
7 determined. Additionally, the system uses a plurality of interferometer antennas
8 and cross-correlation techniques to measure the relative phase difference between
9 the signals received by the antennas. Thereby, the angle of arrival of the reflected
10 signals from the target is determined. Combining the range and angular information
11 locates the target."

12 Thus Afendykiw is concerned with the position of a target using a radio frequency source
13 of opportunity. Afendykiw is not concerned with measurement or estimation of a sound
14 source position at an angle in a system with a small number of microphones. Claim 6 as
15 amended reads:

16 (6) A sound source localization method comprising acquiring the position of a
17 sound source under the control of an information processing apparatus, said step
18 of acquiring comprising:

19 a step of collecting acoustic data with delay information superposed corresponding
20 to a relative position between a sound source and sound collecting means,
21 employing a sound reflecting element wherein a reflecting surface of the sound
22 reflecting element is designed as an envelope made from a plurality of spheroids
23 formed by rotating a plurality of ellipses having two focal points corresponding to
24 the sound source and the sound collecting mean respectively, around an axis
25 connecting the focal points;

26 a step of storing said collected acoustic data in a storage part; and

27 a step of reading the acoustic data with said delay information superposed and
28 acquiring said relative position of said sound source designated by said delay

1 information.

2 A review of Afendykiw shows that although Afendykiw is concerned with a delay
3 measurement, the measurement is for RF and fails to make the elements of claim 6
4 obvious. Afendykiw fails to teach or concern with:
5 any sound source localization method;
6 any acquisition of position of a sound source;
7 any collecting of acoustic data;
8 any acoustic data with delay information;
9 any position between a sound source and sound collecting means;
10 employing a sound reflecting element;
11 any reflecting surface of a sound reflecting element;
12 a plurality of ellipses;
13 ellipse focal points;
14 any sound reflecting element designed as an envelope made from a plurality of
15 spheroids formed by rotating a plurality of ellipses having two focal points;
16 any focal points corresponding to a sound source and a sound collecting mean; or
17 any axis connecting of focal points;
18 storing collected acoustic data in a storage part;
19 reading acoustic data;
20 superposing delay information superposed on acoustic data; or
21 acquiring any relative position of a sound source designated by delay information.
22 Afendykiw certainly doesn't teach, allude to or make obvious any of the steps of claim 6.
23 Thus claim 6 and all claims that depend upon claim 6 are allowable over Afendykiw

24 *Dependent claims 7-10 are further provided by Afendykiw et al.*

25 In response the applicants respectfully state as with claim 6, Afendykiw fails to make
26 obvious any of the limitations in claims 7-10. Thus claims 7-10 are each allowable for
27 itself and because it ultimately depends on allowable claim 6.

- 1 Claims 21-29 are added to better protect the invention for the applicants. It is anticipated
2 that this amendment shows that claims 1-29, except as withdrawn, are allowable.
- 3 If any question remains, please contact the undersigned before issuing a communication
4 with a FINAL status.
- 5 Please charge any fee necessary to enter this paper to deposit account 50-0510.

6 Respectfully submitted,

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